NEW PERILAMPIDAE

(HYMENOPTERA: CHALCIDOIDEA)

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ABSTRACT—Descriptions of **Echthrodape africana**, n. gen. and n. sp., parasitic in nests of bees of the genus *Allodapula* Cockerell in Kenya, East Africa; *Perilampus* **philembia**, n. sp., parasitic on a sclerogibbid primary parasite of *Embia batesi* MacLachlan in Peru; *Euperilampus* **krombeini**, n. sp., from Arizona; *Chrysolampus* **anobii**, n. sp., from wood infested with anobiid beetles in the state of Virginia. The genus *Euperilampus* Walker is recharacterized.

In this paper I describe four new members of the family Perilampidae. First, there is a new genus for a new species that is parasitic in the nests of bees belonging to the genus *Allodapula* Cockerell in Kenya, East Africa. Secondly, a new species of *Perilampus* Latreille that is a secondary parasite of the embiopteron *Embia batesi* MacLachlan in Peru; then, a new species of *Euperilampus* Walker that was taken in collecting from flowers in southern Arizona; and, finally, a new, minute species of *Chrysolampus* Spinola that was reared from wood that was infested with anobiid beetles in Virginia. In addition, I present a characterization of the genus *Euperilampus* Walker, because that genus has not before been adequately defined.

Echthrodape, n. gen.

Female.—Head and thorax with irregular, umbilicate punctation, gaster smooth and polished basally, apically faintly sculptured and with hair punctures and setae laterally. Head transverse, as wide as thorax; antennae inserted above level of ventral margins of compound eyes but below center of frons; apex of scape not reaching level of anterior ocellus; pedicel short, 1 ring segment, 7 funiculars, a 3-segmented club, the latter obscurely differentiated from funicle, fig. 1. Mandibles not meeting on meson when closed, almost edentate, each mandible with faint indication of 2 teeth, fig. 2; maxillary palp with 4 segments, labial with 3, fig. 3; mouthparts semirostrate. Irregular occipital carina present. Clypeus protruding, arcuate on meson, surface smooth, lateral margins obscure, dorsal margin impressed; eyes sparsely hairy and protruding laterally, height of eye 1½ times width of malar space, the latter slightly concave; malar furrow straight, extending from eye to base of semirostrate mouthparts. Margins of scrobe cavity ecarinate; ocelli arranged in a broad triangle, lateral ocellus the same distance from compound eye as from median ocellus; posterior ocelli connected by 1–3 slightly irregular, transverse carinae; occiput lacking transverse carinae.

Pronotum anteriorly ecarinate, relatively short on dorsum, as in North American species of *Chrysolampus* (s.s.); prepectus triangular, anterior margin not fused with posterior margin of pronotum; notaulices complete, deep; each scapula with

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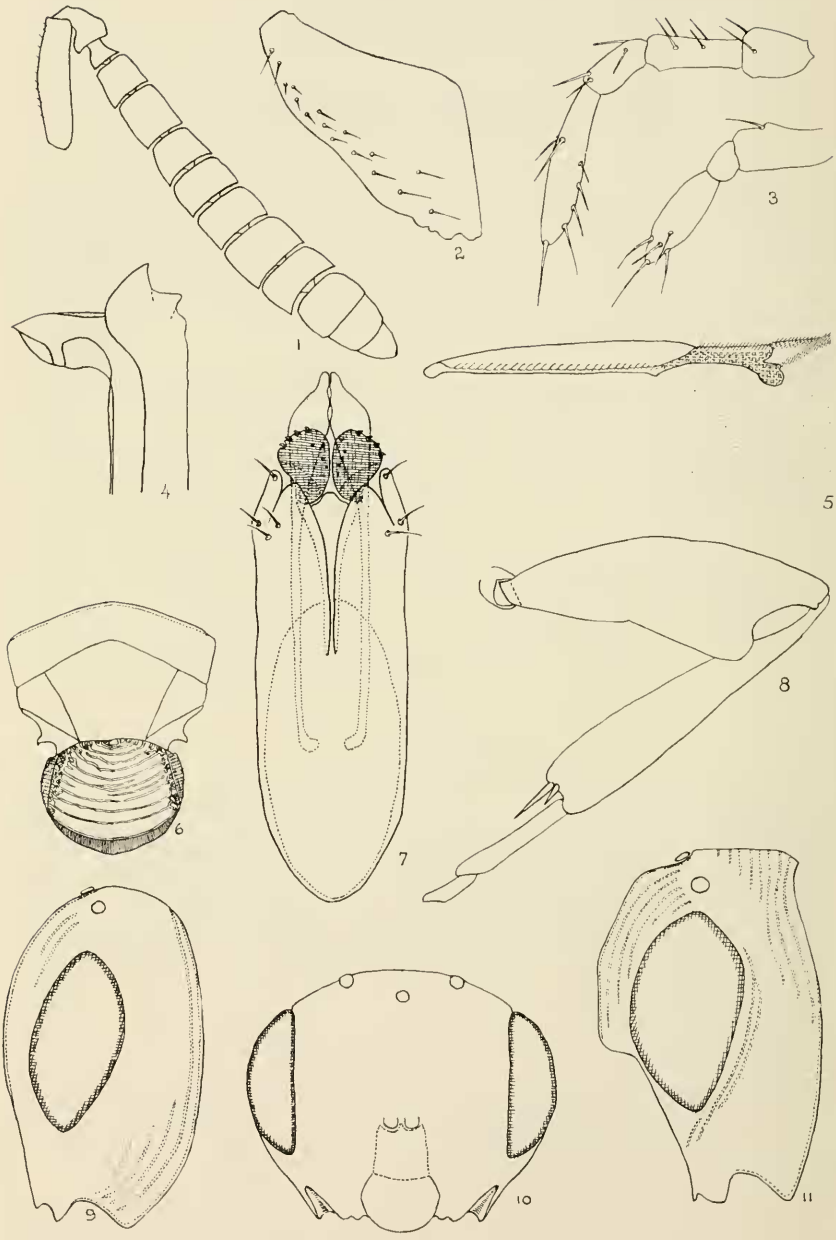

Figs. 1–5, 7–8, *Echthrodape africana*, n. gen., n. sp.: 1, antenna; 2, mandible; 3, maxillary and labial palpi; 4, apex of exserted ovipositor; 5, basal portion of forewing; 7, male genitalia; 8, portion of hind leg, showing trochanters, femur,

a small smooth area at its posterior margin, otherwise entire mesoscutum uniformly covered with umbilicate punctation; axillae meeting on meson, surface of each axilla smooth anteriorly, sculptured posteriorly; scutellum with umbilicate punctation, subapical crossfurrow wanting; apex of scutellum truncate, slightly upturned. Forewing with costal cell relatively narrow, fig. 5; marginal vein short, broad, stigmal vein sessile, postmarginal vein extremely short; hindwing with 4 hamuli. Hind coxa enlarged, rounded in cross-section, hind femur enlarged, with a single large, triangular tooth on ventral margin; hind tibia straight, 2 apical spurs present; basal tarsal segment as long as second and third combined.

Propodeum with irregular, rugose sculpture; spiracles broad, oblique slits; neck absent. Very short, rudimentary petiole present, its surface smooth. Gaster as long as thorax, its dorsal surface flattened, first gastral tergum comprising ⅓ length of gaster; spiracles borne by sixth tergum visible on ventral side; cerci borne by seventh tergum slightly protruding and located at posterior margin of tergum, on ventral side of gaster; ovipositor normally not visible, its apex not reaching apex of gaster, but when extruded it can be seen to possess strong rasping teeth at apex; hypopygium produced almost to apex of gaster.

Male.—Antigeny not great; gaster slightly longer than thorax, first gastral tergum comprising ¼ length of gaster; spiracles of sixth tergum and cerci borne by seventh tergum visible on ventral surface. Penis valve broad, tapering abruptly at apex to a minute, recurved point; each sagitta broad, rounded, bearing 4 acute apical teeth.

Type-species.—*Echthrodape africana*, n. sp.

This genus is allied to *Chrysolampus* as represented by its type-species *Diplolepis splendidula* Spinola, in that the head is transverse, the antennae have the formula 1:1:1:7:3, the thorax has rugose sculpture dorsally, and the gaster is approximately as long as the thorax. The two differ in that *Chrysolampus* has an elongate petiole, each mandible is elongate, with 2 large teeth, the marginal vein is long and slender, and the cerci are not exserted. In *Echthrodape* the abdomen is virtually sessile, each mandible is reduced to a short, rudimentary structure with 2 minute teeth, the marginal vein is short and thick, and the cerci are exserted.

Family placement of this genus presented a problem. It might almost with equal reason have been assigned to the Torymidae, Pteromalidae, or Perilampidae. It seems, however, to have a slight preponderance of perilampid characters, so I have placed it in that family.

Echthrodape africana, n. sp.

Female.—Length, 3.5–4.0 mm. All pubescence silvery except on hind legs, where it becomes golden; head metallic blue, shading to brassy-green on face; antennae black, scape with metallic green luster; thorax bright metallic blue with purple highlights, tegulae tan, wingveins black; forewing shaded with dark

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tibia and basal 2 tarsal segments. Figs. 6, 9, *Euperilampus krombeini*, n. sp.: 6, dorsal aspect of scutellum, showing transverse, arcuate rugae and apical flange; 9, lateral aspect of head. Fig. 10, *Chrysolampus anobii*, n. sp., anterior aspect of head. Fig. 11, *Euperilampus hyalinus* (Say), lateral aspect of head.

brown behind marginal and stigmal veins and along paths of obsolete veins; trochanters brown, mid femora brown, apices yellow, hind femora metallic blue, apices yellow; all tibiae tan shaded with brown in the middle; all tarsi tan; propodeum and gaster metallic blue with purple highlights.

Pedicel of antenna 1⅓ times as long as wide, ring segment ½ as long as pedicel, funicular segments 1–7 slightly wider than long, club as long as 2 basal funiculars. Apical segment of maxillary palp as long as second and third segments combined, apical segment of labial palp almost as long as first and second segments, fig. 3; ocellocular line equal to long diameter of lateral ocellus and ⅔ the postocellar line.

Punctation of pronotum and anterior area of praescutum somewhat obscured by short, irregular, transverse carinulae; mesoscutum with clear-cut umbilicate punctation over most of its extent, interstices on praescutum with minute, closely set striae, interstices on scapulae and scutellum smooth; prepectus with faint, closely set, linear striae; dorsal sector of mesepimeron almost entirely smooth, ventral sector shagreened; metapleuron densely setose and punctate; hind coxa densely setose ventrally, shagreened and asetose dorsally; hind femur punctate, setose on outer side, interstices dull, sculptured, tooth on outer ventral margin, fig. 8, located at 2.3 the distance from base to apex of femur; inner side of femur smooth, shining; hind tibia densely covered with short, golden setae. Forewing, fig. 5, with submarginal vein 4 times as long as marginal, postmarginal ⅕ as long as marginal, and stigmal ⅓ as long as marginal; fringe at margin of wing absent anteriorly and apically, very short and inconspicuous posteriorly; hindwing with 1 or 2 straight and 2 hooked hamuli.

Propodeum with rugose, irregular sculpture, a shallow, pentagonal pit located on meson at base; spiracles not quite touching anterior margin of propodeum. Rudimentary petiole smooth, shining, twice as broad as long. Gaster as long as thorax, flattened dorsally, first tergum smooth, asetose and comprising ⅓ dorsal surface of gaster, its posterior margin with a minute, median emargination; following gastral terga lightly sculptured and bearing hair punctures and short setae in basolateral areas; rudimentary eighth tergum present, bearing about 10 long bristles. Ovipositor, fig. 4, bearing strong rasping teeth.

Male.—Length, 3.5–4.5 mm. Color and structure essentially as in female; transverse carinulae hardly visible on thoracic dorsum; forewing with marginal fringe well developed; gaster slightly longer than thorax; first gastral tergum comprising ¼ dorsal length of gaster; hair punctures and setae on terga 2–6 more extensive than in female, covering most of dorsal surface; eighth tergum not visible; male genitalia as in fig. 7.

Type locality.—Nairobi, Kenya.

Holotype.—USNM 69936.

Described from the holotype ♀, allotype ♂, and 1 ♀, 3 ♂ paratypes from Nairobi, Kenya, reared May 11, 1967, from the nests of *Allodapula* sp. in dead stems of *Lantana camara* by C. D. Michener. The holotype, allotype, and 2 ♂ paratypes are deposited in the USNM collection; 1 ♀, 1 ♂ paratypes are deposited in the British Museum (Natural History) collection.

Biological relationships.—This species is apparently a primary parasite of the larva of a bee belonging to the genus *Allodapula*.

Perilampus philembia, n. sp.

Female.—Length, 1.75–2.50 mm. Black, thoracic dorsum with metallic blue or green luster; antennae tan; wings hyaline, venation dark brown; hind coxae and all femora dark brown with faint metallic blue luster, tibiae yellow shaded with tan at bases, tarsi yellow with apical segment of each tan. Head, body, and legs sparsely clothed with silvery pubescence.

Head smooth and shining, occiput with closely set, parallel striae, these extending onto lateral area of each gena; clypeus as broad as high, clearly delimited laterally and dorsally by impressed sutures; right mandible with 3 teeth, left with 2; malar groove present, but weak, straight; width of malar space ¼ eye height; eyes bare; frons and vertex entirely without carinae or other sculpture; apex of antennal scape not reaching level of anterior ocellus, pedicel 1½ times as long as wide, ring segment ¼ length of pedicel all funicular segments broader than long, club as long as basal 3 funiculars; vertex broad, rounded, ocelli in a broad triangle; ocellocular line ⅘ as long as postocellar line.

Pronotum with carinate anterior margin dorsally, laterally with a few umbilicate punctures continued from lateral surface of pronotum onto anterior face of segment; prepectus clearly separated from pronotum by a complete anterior suture, prepectus smooth and shining on disc, with a row of large, semiquadrate punctures along lateral and ventral margins; mesal half of each scapula smooth, shining; axilla with closely set, longitudinal surface striae; anterolateral area of scutellum smooth, shining, with 2 or 3 incomplete, quadrate punctures at anterior and ventral margins, apical frenum with a dorsal and ventral row of large, quadrate punctures, scutellum otherwise umbilicate-punctate; mesopleuron mostly smooth and shining, but with a vertical row of large round punctures on episternum, a broad, dull, depressed area at femoral groove, and usually 2 large, round punctures on epimeron; metapleuron with depressed, irregular sculpture dorsally, smooth and shining ventrally; all coxae smooth and shining, hairy on anterior surface; femora clothed with slender setae, tibiae with stout, short setae; forewing with marginal and postmarginal veins equal in length, stigmal half as long as marginal, and submarginal 3¼ times as long as marginal; hindwing with 1 straight and 2 hooked hamuli.

Propodeum with strong median carina, 2 ovate pits on each side of it at base, a pair of semiquadrate pits on each side of median carina posterior to basal ones; space between these pits and spiracular areas smooth, but not shining; neck at apex of propodeum short, a pair of ovate pits on meson at its base, surface otherwise with closely set, transverse striae. Rudimentary petiole broader than long, surface shining, slightly roughened. Gaster smooth, shining, ⅘ as long as thorax; ovipositor sheaths, visible on venter, densely hairy.

Male.—Length, 1.75–2.0 mm. Color as in female, structure essentially as in female; anterior surface of antennal scape minutely shagreened on apical ⅓; gaster ⅔ as long as thorax; subgenital plate sparsely clothed with short hair, apex rounded.

This species is related to *Perilampus politifrons* Howard (1894), described from the West Indies island of St. Vincent, in that the vertex is broad, the frons lacks carinae or sculpture of any kind, the mesal half of each scapula is smooth and shining, and, in the male, the gaster is ⅔ as long as the thorax and the subgenital plate is sparsely

hairy with the apex rounded. The two differ in that the thoracic dorsum in *politifrons* is completely black, but has metallic blue or green luster in *philembia*; the malar space is short in *politifrons*, only ⅛ the eye height, but it is ¼ the eye height in this species; the prepectus is partly fused with the pronotum in *politifrons*, but is clearly separated in this species; and the postmarginal vein in *politifrons* is ⅔ as long as the marginal, but it is as long as the marginal in this species.

Type locality.—Tingo Maria, Peru.

Holotype.—In the California Academy of Sciences collection, San Francisco, California.

Described from the holotype ♀, allotype ♂, and 2♀♀, 1 ♂ paratypes reared from cocoons of an unidentified sclerogibbid primary parasite of the embiopteron *Embia batesi* MacLachlan at Tingo Maria, Peru, Nov. 1–12, 1954, by E. I. Schlinger and E. S. Ross. The holotype, allotype, and 1 ♀ paratype are deposited in the California Academy of Sciences collection; 1 ♀, 1 ♂ paratypes are deposited in the U. S. National Museum.

Biological relationships.—This is a secondary parasite, emerging from the cocoons of a sclerogibbid (Hymenoptera, Bethyloidea) primary parasite of *Embia batesi* MacLachlan (Embioptera).

Perilampus politifrons Howard (1894), the species with which I compare *philembia*, was described from 2 ♂♂ cotypes, 1 of which is in the U. S. National Museum.

Genus **Euperilampus** Walker

The genus *Euperilampus* Walker (1871) is customarily characterized as a perilampid with the scutellum "produced into a long spine" (Ashmead, 1904). However, this is a highly variable character and one that also occurs in other perilampid genera, such as *Monacon* Waterston (1922). The significant difference between *Euperilampus* and other perilampids is that the prepectus in *Euperilampus* is reduced to a minute sclerite, much smaller than the tegula, that is visible at the dorsolateral angle of the pronotum. In other perilampids the prepectus is a triangular sclerite, much larger than the tegula, with its long anterior margin in contact with the posterior margin of the pronotum. Riek (1966) has also pointed out that *Euperilampus* has the postmarginal vein much longer than the marginal.

Inasmuch as *Euperilampus* has never been adequately defined, and I am describing a new species in it in this paper, I present the following characterization of the genus:

Malar furrow absent; left mandible with 2 large teeth, right mandible with 3; clypeus broader than high or as broad as high, ventral border with a broad, shallow, median emargination. Antenna with the formula, 1:1:1:7:3, with appendiculate segment clearly visible at apex of club. Scrobe cavity strongly carinate, anterior ocellus located just inside the cavity. Ocelli lying almost in a

straight transverse line. Parascrobal spaces with vertical carinae, occiput with transverse carinae.

Anterior margin of pronotum strongly carinate, projecting slightly anteriorly so as to form a shallow cavity into which occiput of head normally fits. Prepectus reduced to a minute structure smaller than tegula. Forewing with postmarginal vein longer than marginal, stigmal and marginal veins subequal or equal in length. Hind tibia with 2 spurs of approximately the same length. Scutellum produced over propodeum and base of gaster, apex of scutellum may be spinelike, shelflike, ligulate, or produced as a narrow truncation.

Propodeum with a median, longitudinal indentation which may be a groove, an elongate triangle, or a furrow. Gaster broad, shorter than thorax in both sexes, with terminal tergites reflexed anteriorly on venter, dorsum composed of fused first and second terga, with basal portion of third tergum usually dorsal, but most of third tergum lying obliquely ventrad.

Type-species.—*Perilampus gloriosus* Walker.

Euperilampus krombeini, n. sp.

Female.—Length, 5.0–6.0 mm. Head metallic blue with purple highlights, shading to green on vertex; antennal scape dark metallic blue, pedicel and flagellum dark brown; thorax metallic green, pleura tinged with blue and purple; propodeum and gaster green; wings hyaline, veins and paths of obsolete veins brown; coxae, trochanters, and femora blue, tibiae dark brown, tarsi tan; all pubescence silvery.

Width of malar space ¼ eye height; ocellocular line ⅘ the postocellar line; vertical carinae of parascrobal spaces weak, irregular; height of clypeus ¾ its maximum width; lateral margins of scrobe cavity, fig. 9, not produced near bases, as in *triangularis* (Say), fig. 11.

Dorsum of pronotum and mesoscutum with sculpture formed of rows of closely set punctures interspersed among somewhat irregular, transverse rugae; scutellum with stronger, arcuate rugae, apex of scutellum, fig. 6, rounded, projecting over propodeum and base of gaster; forewing with marginal and stigmal veins equal in length, postmarginal 3 times as long as marginal and ½ as long as submarginal; hindwing with 1 straight and 2 hooked hamuli, the two types separated by a space as great as length of straight hamulus.

Propodeum vertical, with a median, vertical furrow, space on each side of furrow with slightly irregular, closely set, transverse carinulae; spiracles touching anterior margin of propodeum. Minute, smooth petiole visible. Gaster ⅔ as long as thorax, smooth and shining; 2 small, ovate, roughened areas at base of first gastral tergum and a median, longitudinal row of closely set punctures extending from base ⅔ the distance to apex of first tergum, a pair of broadly arcuate lines of punctures joining apex of median punctate line; second tergum bearing hair punctures laterally; third tergum with a band of hair punctures completely crossing basal half; following terga reflexed beneath gaster, fourth tergum usually visible beneath third, following terga not visible without dissection, but apex of ovipositor sheaths and cerci usually protruding beneath reflexed fourth tergum.

Male.—Length, 4.0–5.5 mm. Antigeny slight; antennal flagellum usually dark tan and propodeum metallic blue with purple highlights. Gaster slightly shorter than in female.

This species differs from *triangularis* (Say) in having the scutellum

less produced at the apex, in having the parascrobal carinae weaker, in lacking a prominent projection on the lateral scrobe margin, and in having a median vertical groove on the propodeum instead of a triangular depression. This species agrees with *triangularis* in all the generic characters listed above, and the two are much alike in color, both being predominantly metallic green. This species certainly is different from the type-species of *Euperilampus*, *gloriosus*, described from Mexico, because *gloriosus* has the scutellum produced as a long spine and the gaster is copper colored. I have not seen the type of *gloriosus*, but the late A. B. Gahan studied it in 1927 and made detailed notes on it. These notes are preserved in the U. S. National Museum, and I have made full use of them.

Type locality.—Tucson, Arizona.

Holotype.—USNM 69937.

Described from the holotype ♀, allotype ♂, and 1 ♀, 4 ♂♂ paratypes collected on flowers at Tucson, Arizona, Aug. 6, 1959, by K. V. Krombein, and 1 ♀, 2 ♂♂ paratypes collected on flowers at Continental, Arizona, Aug. 2–4, 1959, by K. V. Krombein.

Biological relationships.—Nothing is known of the host of this species; the types were taken on flowers along with aculeate Hymenoptera. It is likely, however, that this species is a secondary parasite.

Chrysolampus anobii, n. sp.

Female.—Length, 1.8 mm. Black; antennal scape dark brown, flagellum tan; mandibles tan; tegulae tan, wings hyaline, veins pale tan; legs shining brown, with tarsi pale tan.

Head smooth and shining, occiput with transverse, closely set striae; malar furrow faint but present; left mandible with 2 large, acute teeth, right mandible with 3; clypeus 1½ times as broad as high, ventral margin broadly rounded, fig. 10; antennae inserted well above level of ventral margins of compound eyes; scrobe cavity shallow, margins ecarinate; pedicel and first funicular segment equal in length, second funicular ⅗ as long as first, second to seventh funiculars equal in length, club 1⅗ as long as pedicel. Vertex smoothly rounded and broad, without sculpture or carinae; ocellocular line ⅗ as long as postocellar line; head wider than thorax.

Pronotum with a strong, transverse carina and 2 rows of gross, quadrate, umbilicate punctures; praescutum with gross, semiquadrate, umbilicate punctures, interstices lamellate; scapulae mostly smooth and shining, becoming sparsely punctate laterally; prepectus large, triangular, and flat, anterior margin not fused with pronotal margin, surface smooth and shining, a row of large punctures along dorsal and ventral margins; scutellum with gross, quadrate or pentagonal, umbilicate punctures, interstices lamellate; axillae almost smooth, very faintly aciculate. Forewing with submarginal vein 2½ times as long as marginal, postmarginal ½ as long as marginal, and stigmal ¼ as long as marginal; stigmal vein lying almost at right angles to marginal vein; marginal fringe of wing long.

Propodeum with median carina and sculptured lateral and posterior margins, otherwise smooth; small nucha at apex of propodeum. Petiole almost as long as

hind coxa, twice as long as wide, surface dull, minutely sculptured. Gaster smooth, shining; entire dorsal surface of gaster composed of the fused first and second gastral terga, following terga telescoped beneath these and not visible without dissection; gaster slightly wider than thorax, both narrower than head; gaster and thorax equal in length.

Male.—Length, 1.8 mm. Identical to female except in structure of subgenital plate. Antennal scape not modified, as in males of *Perilampus*.

This species is related to *Chrysolampus lycti* Crawford in having the same type of distinctive sculpture on the thoracic dorsum, in having a strong, transverse carina on the dorsum of the pronotum, and in having the abdomen petiolate. They differ in that *anobii* is much smaller (only 1.8 mm. as against 3.0–4.0 mm. in *lycti*); *anobii* is black, while *lycti* has metallic coloration; and the frons in *anobii* is smooth, but it is heavily sculptured in *lycti*.

Type locality.—Williamsburg, Va.

Holotype.—USNM 69940.

Described from the holotype ♀, allotype ♂, and 1 ♀, 2 ♂♂ paratypes reared in 1961 at Williamsburg, Va., from wood infested with undetermined anobiid beetles by Sims. The holotype and allotype are in the USNM collection; the paratypes are deposited in the British Museum (Natural History) collection. I am indebted to G. J. Kerrich for sending me this interesting species for description.

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